	Title of the Subject: **Auto electrical and electronic systems**	Sem**:5** Code**: UAU551N** Credits: **3**												PSO		
														1	**2**	**3**
	Programme Outcomes / **Course Outcomes**	**Engineering knowledge**	**Problem analysis:**	**Design/development of solutions**	**Conduct investigations of complex problems**	**Modern tool usage:**	**The engineer and society:**	**Environment and sustainability:**	**Ethics:**	**Individual and team work**	**Communication:**	**Project management and finance:**	**Life-long learning:**	**Apply engineering basic knowledge with modern computing tools in solving problems of design, production and servicing domains**	**Mould and develop engineers to serve in industries as professionals or entrepreneur**	**Prepare engineers to undertake research and higher learning**
1	Elucidate the construction, working and elements of different batteries, electrical accessories and dash board instruments.	3	2	2	1	2	1				1	1	1	1	2	2
2	To comprehend and apply automotive advancements and analyze for performance	3	2	1	1	2	1				1	1	1	1	2	2
3	Able to illustrate the construction and working of different ignition system and their fault diagnosing methods and remedial techniques.	3	2	2	2	2	1				1	1	1	2	2	2
4	To realize the construction and working of starter motors and alternators	3	2	1	1	2	1				1	1	1	1	2	2
5	Analyze the working of vehicle safety systems and auxiliary systems	3	2	1	2	2	1				1	1	1	1	2	2

Common to All Branches

UAU551N: AUTO ELECTRICAL AND ELECTRONIC SYSTEMS
3 Credits (L T P: 3 - 0 - 0)

UNIT - I 10 HOURS

STORAGE BATTERY: Introduction, principle, construction and working of lead acid battery, battery tests, battery ratings, methods of charging. Alkaline, Nickel - Cadmium battery, Lithium batteries. Battery trouble shooting.

INDICATING AND WARNING DEVICES AND DASH BOARD INSTRUMENTS: Fuel gauge, oil-pressure gauge, water temperature gauge, speedometers, horn, windscreen-wipers, signaling devices, brake warning light.

UNIT - II 10 HOURS

AUTOELECTRONICS: Introduction to Electronic systems in Automotives - Sensors, ECU and actuators for body electronics, power train and chassis systems.
Transmission control, ABS, ESP, Traction Control, Active Suspension, passive safety, Adaptive Cruise Control. On-Board Diagnostics (OBD). Electronic suspension system.
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UNIT - III 10 HOURS

IGNITION SYSTEM: Ignition fundamentals, types of ignition systems and related components. Spark plugs; general considerations, characteristics, materials. Ignition timing; advance mechanism; centrifugal and vacuum. Ignition system trouble shooting.
ELECTRONIC IGNITION SYSTEMS: Advantages, types, distributors less ignition system, multiple coil ignitions, direct capacitor charge ignition. Electronic spark advance.

UNIT - IV 10 HOURS

OTHER SYSTEMS: Introduction to starter motor and drives, alternator and types, lighting systems. Electronic fuel injection systems. Types of air conditioners: manually controlled, automatically controlled. Oscilloscope. Networks and multiplexing, vehicle safety systems: seat belts, air bags. Trouble shooting diagnosis of starting motors and alternators.

TEXT BOOKS:

1. Automobile Engineering: Kirpal Singh

2. Automobile Mechanics: William H Crouse

3. Automotive Electrical equipments: P. L. Kohli